

IN THE CLAIMS

1. (currently amended) An apparatus-(1) for the axial movement of a piping-(2) or the like, characterized in that it comprises comprising: a support frame-(5), a first hoisting element-(11) fixed to said frame-(5) and a second movable hoisting element-(13) apt to slide on guides-(12), and actuation means-(15, 16, 17; 70, 71, 72) apt to move said second hoisting element-(13) giving thereto a cyclic reciprocating motion along said guides-(12) between a bottom dead center (BDC) and a top dead center (TDC), each of said first and second sliding hoisting elements-(11, 13) comprising means-(22, 23, 24, 25, 26, 30, 31; 90, 92, 93, 94) for tightening the piping-(2) to be moved, the arrangement being such that said piping-(2), owing to said tightening means-(22, 23, 24, 25, 26, 30, 31; 90, 92, 93, 94), be constrained to said second-sliding hoisting element-(13) during a first half of the movement cycle and constrained to said first-sliding hoisting element-(11) during a second half of said cycle, overall attaining an axial movement of said piping-(2) substantially equal to the distance between said top dead center (TDC) and said bottom dead center (BDC).

2-43(canceled)

44. (new) The apparatus according to claim 1, wherein said first and second hoisting elements are mounted in a manner such as to be constantly aligned during their relative motion.

45. (new) The apparatus according to claim 44, further comprising a third top hoisting element, integral to said frame and aligned to said first and second hoisting elements.

46. (new) The apparatus according to claim 1, wherein each of said first, second, and third hoisting elements comprises a boxed body having a through hole apt to allow the passage of the piping to be moved.

47. (new) The apparatus according to claim 1, wherein said second movable hoisting element comprises wheels apt to slide along said guides.

48. (new) The apparatus according to claim 47, wherein said guides comprise respective rack portions and said wheels are gears.

49. (new) The apparatus according to claim 1, wherein said actuation means comprises an

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electric motor and a connecting rod system for imparting a driving motion to said second movable hoisting element.

50. (new) The apparatus according to claim 1, wherein said actuation means comprises a hydraulic drive system comprising one or more rams connected between said frame and said second movable hoisting element.

51. (new) The apparatus according to claim 1, wherein said actuation means comprises an electric motor and a worm screw-nut screw system for the transfer of motion to said second hoisting element.

52. (new) The apparatus according to claim 1, wherein each of said hoisting elements comprises a wall portion internal to said passage hole.

53. (new) The apparatus according to claim 52, wherein said wall portion has a substantially semi-cylindrical shape and a surface made in a manner such as to exhibit a high friction coefficient.

54. (new) The apparatus according to claim 53, wherein said surface of said wall portion has knurls and/or toothings apt to mesh to an external wall of said piping.

55. (new) The apparatus according to claim 1, wherein said tightening means comprises a roll element, substantially having a globe-shaped contour, apt to cooperate with an external wall of said piping.

56. (new) The apparatus according to claim 55, wherein said roll element has a surface made in a manner such as to exhibit a high friction coefficient.

57. (new) The apparatus according to claim 56, wherein said surface of said roll element has knurls and/or toothings apt to mesh to an external wall of said piping.

58. (new) The apparatus according to claim 55, wherein said roll element is integral to a rotation shaft and mounted on a pair of gears.

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59. (new) The apparatus according to claim 1, wherein said tightening elements comprise a tie block having a recess reproducing in negative the contour of said piping.

60. (new) The apparatus according to claim 59, wherein the surface of said recess exhibits a high friction coefficient.

61. (new) The apparatus according to claim 60, wherein the surface of said recess has knurls and/or toothings apt to mesh on the external wall of said piping.

62. (new) The apparatus according to claim 59, wherein said tie block is pivoted onto a first shaft, said first shaft being mounted on a pair of gears, and fixed joint connected to a second shaft.

63. (new) The apparatus according to claim 55, wherein said tightening means comprises a tie block, incorporating a recess reproducing in negative the contour of said piping, apt to cooperate with said roll element for the joint tightening of said piping, wherein the rotary motion of said roll element is transformed into translatory motion of said tie block via an element substantially shaped as a connecting rod, a first end of said element being hinged to said roll element and a second end being hinged to said tie block, so that the coming to hold of said tie block substantially works as a stop to the advance of said roll.

64. (new) The apparatus according to claim 58, wherein said gears are coupled to respective racks.

65. (new) The apparatus according to claim 64, wherein said racks are linear and mounted integrally to said boxed body in a manner tilted with respect both to a working plane and to said piping to be moved.

66. (new) The apparatus according to claim 64, wherein said racks have a curvilinear sliding contour.

67. (new) The apparatus according to claim 58, wherein said tightening means further comprises a pair of guide slots, obtained on the lateral sides of said boxed body and parallel to said racks, apt to the sliding of said shaft.

68. (new) The apparatus according to claim 58, wherein said tightening means further comprises one or more elastic elements apt to return said roll element in the direction of the piping to be moved.

69. (new) The apparatus according to claim 68, wherein said elastic elements comprise two helical springs connected between the ends of said shaft and respective anchoring points on said boxed body.

70. (new) The apparatus according to claim 1, further comprising a control system, apt to allow the starting and/or the stopping of the apparatus.

71. (new) The apparatus according to claim 45, wherein said third top hoisting element, comprises a release for the extraction of the piping once the latter has been moved.

72. (new) The apparatus according to claim 71, wherein said release comprises a system of levers and a pair of racks coupled to the gears, the arrangement being such that such levers, actuated by traction of a string, drag the racks causing the rotation of the gears and the moving of the roll away from the piping.

73. (new) The apparatus according to claim 1, further comprising a safety device, apt to automatically interrupt the operation of the apparatus at the end of the step of moving the piping.

74. (new) The apparatus according to claim 1, further comprising a control bar slidably connected to said moving assembly, apt to cooperate with said first and second hoisting elements for the synchronization of the stages of the movement cycle.

75. (new) The apparatus according to claim 74, wherein said control bar is apt to translate vertically in a manner such as to assume a first top position and a second bottom position by means of said second hoisting element.

76. (new) The apparatus according to claim 75, comprising intercepting elements for the triggering of corresponding actuation mechanisms, mounted on said first and second hoisting elements, at said first top position and second bottom position assumed by said control bar.

77. (new) The apparatus according to claim 76, wherein said intercepting elements comprise tabs obtained on said control bar.

78. (new) The apparatus according to claim 77, wherein said intercepting elements comprise projections integral to said frame.

79. (new) The apparatus according to claim 76, wherein said actuation mechanisms comprise a lever apt to cooperate with an articulation of elements, varying their configuration so that said piping be reciprocatingly constrained to said first hoisting element during a first half of said movement cycle and to said second movable hoisting during a second half of said movement cycle.

80. (new) The apparatus according to claim 79, wherein the configuration of said articulation of elements is fixed by pins.

81. (new) The apparatus according to claim 80, wherein said pins, located at the articulation between said rods and said arm, are selectively extractable from respective recesses by means of a control system, according to the position reached by said control bar.

82. (new) The apparatus according to claim 81, wherein said control system comprises actuators.

83. (new) The apparatus according to claim 82, wherein said actuators are of the kind with photoelectric detection position transducers.

84. (new) The apparatus according to claim 1, comprising optoelectric detection devices for the synchronization of the movement cycle.

85. (new) The apparatus according to claim 84, wherein said detection devices are photoelectric sensors.